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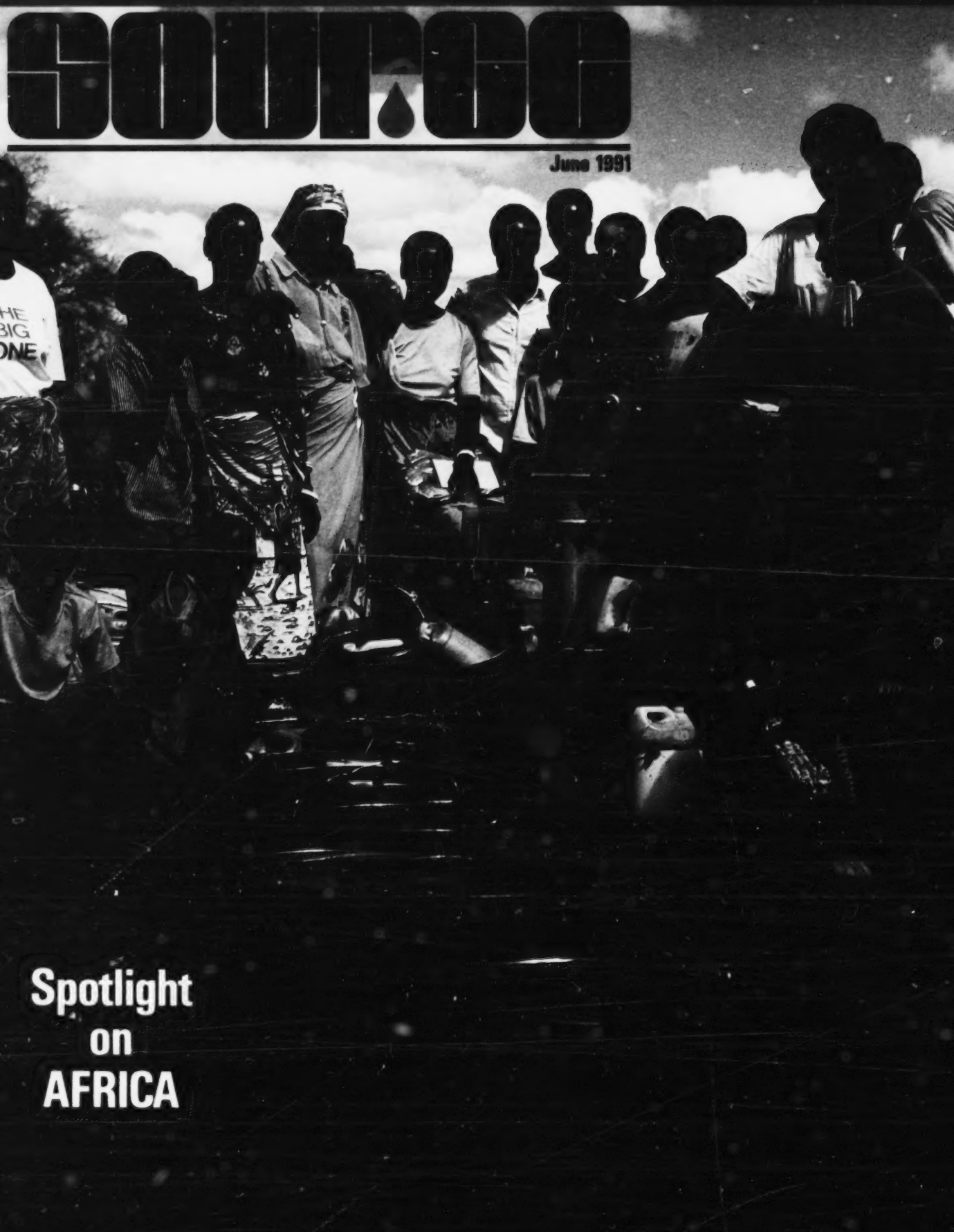

Spotlight on AFRICA

Africa: Bringing Lessons to Bear

By David Grey

David Grey

Many Africans are as poor today as they were 30 years ago. More than half the region's governments are undertaking structural adjustment programmes. Two out of three people in rural areas drink poor quality water. Over 300 million rural and urban residents have no safe means of disposing of human and household waste.

Economic austerity and rapid population growth will increase the number of poor Africans over the next 10 years. During this period of hardship, special efforts must be made to provide basic water and sanitation services to the poor. These services are one of the keys to economic growth and to the foundation of a successful war on poverty. Sustained development depends on healthy people, and goods cannot be produced by households, farms or industries without water. The future development of Africa depends on the sound management of water resources and wastes. Indiscriminate disposal of wastes can inflict irreparable damage on soil and water resources, particularly in Africa, where climate is highly variable, and where fragile environments are already threatened by drought, deforestation and desertification.

Africa still has remarkable strengths, and it is richer in terms of the knowledge it has acquired during the years of the Water and Sanitation Decade (1981-1990). Many appropriate technologies, once considered unconventional, were pioneered in Africa and are now being adopted within the region and beyond. Community participation in construction and maintenance is common, and there is recognition that some cost-sharing, even among the poorest rural communities, is a critical step on the path to sustainability.

The tenor of the recent debate in Africa demonstrates that radical lessons have been learned, often the hard way. The African Water Supply and Sanitation Sector Conference and Workshop held in Abidjan in May 1990, under the auspices of the African Development Bank, the World Bank and UNDP, reached remarkable consensus on thorny issues. Key among these were that governments should turn from being a provider of services to a promoter and facilitator, building the capacity at the village or district level to deliver and sustain services. The delegates, from 46 African countries, also agreed that programmes should adopt a "demand-driven" approach, so that services better reflect what people want and are willing to pay for.

The common philosophy emerging from the dialogue better equips African countries for the challenges lying

Continued on page 31

David Grey headed the UNDP-World Bank Water and Sanitation Programme from June 1989 to June 1990. He was recently appointed as senior water resources engineer to the World Bank's Africa region. His prime task is to develop a water and sanitation strategy for Africa's poor.

SOURCE

June 1991

Page 16: Remote villages in Madagascar now have fresh water in their school yards.

Page 26: Most Gambians sleep under mosquito nets.

Cover: Villagers in southern Zambia are pleased with their new handpump. Photo by David Kinley / UNDP.

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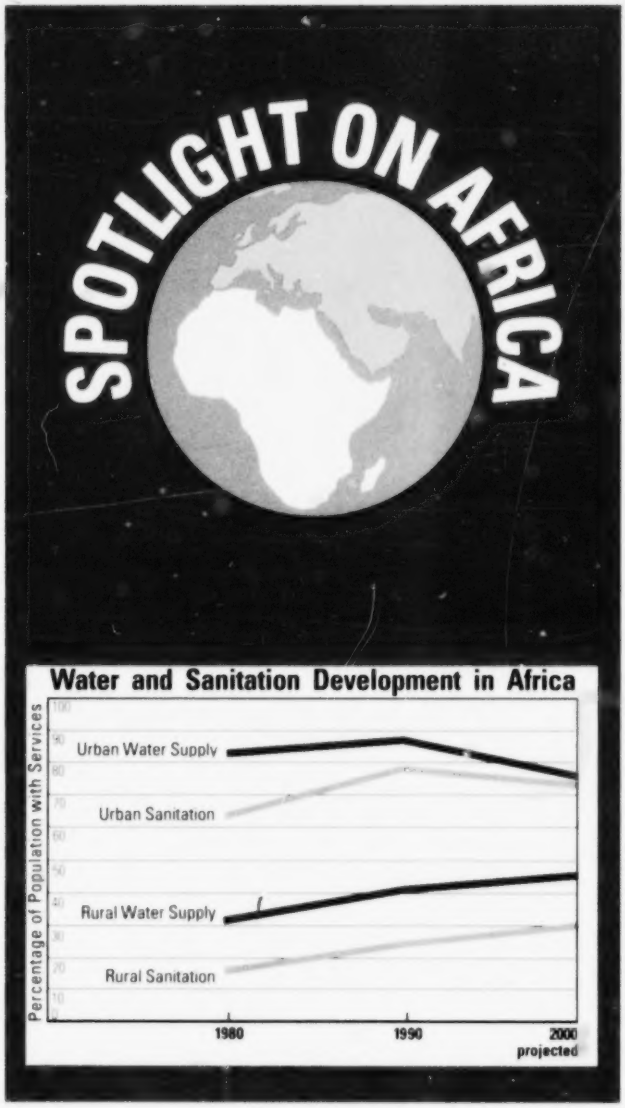


Time for a Water and Sanitation Revolution

The figures spell gloom: at the close of the International Drinking Water Supply and Sanitation Decade in 1990, 20 million more people in Africa lacked safe water and 30 million more lacked adequate sanitation than 10 years earlier. While in percentage terms coverage of all Africa edged up to 64.5 per cent for water supply and to 52.5 per cent for sanitation, governments were hard pressed to keep pace with population growth that averaged more than three per cent a year, and urban population growth reaching nearly 80 per cent for the decade. Worse still, the UN team that compiled the figures fears that many governments provided overly optimistic data.

Against this sombre backdrop, delegates from 46 African nations attended the African Water Supply and Sanitation Sector Conference and Workshop, hosted last May by the African Development Bank in Abidjan, Côte d'Ivoire. Realistically, the delegates decided against setting a target of attaining full coverage of water supply and sanitation by the year 2000. The reason: too many people, too few resources.

The good news is that a consensus was reached on how to tackle the next stage of development. Delegates pledged to increase interregional co-operation in finding joint solutions to their problems. Among their shared goals is the need to base investments on effective demand — an important principle which, when overlooked, all too often results in the kind of white elephants that Executive Editor David Kinley found in rural Zambia. The delegates agreed, moreover, that investments in water and sanitation services must be recovered through user fees, and supported privatization as a route to greater efficiency. But for governments used to being the main providers of these services, the transition to privatization can be tough, as our article on The Gambia illustrates.

Africa's declared goal of making water and sanitation services financially viable offers hope for the future. Some governments in other regions may feel they can and should

continue to subsidize water supply and sanitation services, to the point of providing it for free to the poor. But if Africa is ever to attain full coverage, every citizen will have to contribute in some way. Africa's hard-pressed governments are unlikely to be able to increase water and sanitation investments in the near future. Donors, who provide 70 per cent of the region's spending on water and sanitation, already shoulder a heavy burden.

Based on the numbers of unserved, it would cost between US$24.4 to $26.8 billion in 1988 dollars for all of Africa to attain safe water supplies and sanitation facilities. That figure represents half of all world-wide official grant and concessionary loan aid for development in 1989.

Increasing poverty and rapid population growth have put Africa at a greater disadvantage than the other regions. But water and sanitation experts believe it is also the region that offers the biggest scope for improving cost recovery. By improving collection of fees from large water users and polluters and the wealthy, governments could afford to subsidize large-scale programmes for the poor using low-cost, simple technologies.

Like income tax reform, it is an obvious, simple solution that is difficult to enact in a region run by largely undemocratic governments. "In general, African governments are not accountable to the people," says Shashi Desai, an African Development Bank official. "So they don't feel obliged to engineer social improvements." For how long?

The growing clamour for democracy is an exciting new development in Africa. Africans from Mali to Madagascar are making their voices heard. Whether or not their actions peacefully lead to free multi-party elections remains to be seen. After the political revolution, let's hope for a sanitation and health revolution. It's already happening in Latin America, where the democracy that has swept the continent in the past decade has brought major initiatives to combat all aspects of poverty, including lack of sanitation, health and safe water. — **Emma Robson**

Most people in Mali still lack safe water and adequate sanitation.

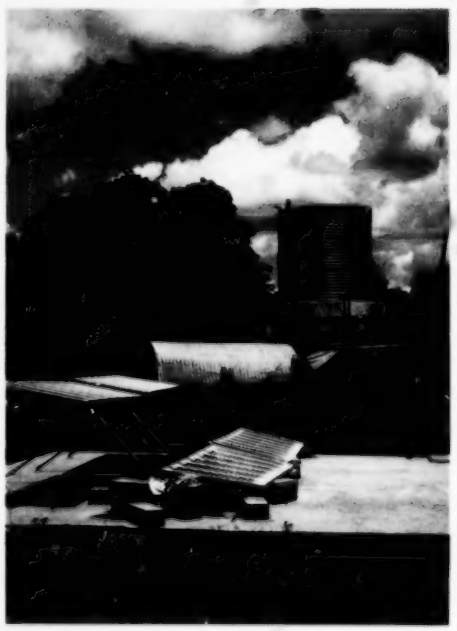
Zambia: Women Organize for Safe Water

By David Kinley

Villagers relied on an unprotected water-hole seven kilometres away.

Mukuni, Zambia —The splendour and power of Victoria Falls fades quickly on the dusty 20-kilometre dirt track leading from Livingstone to this poor settlement, visited on occasion by tour buses seeking a glimpse of "typical Africa." While the nearby Zambezi pours millions of litres of water each hour over a seemingly boundless precipice, fresh water in Mukuni remains a highly prized commodity. In fact, until a few months ago, the nearest source was a murky water-hole seven kilometres away — at least two hours round trip by foot — on a trail trod deep by Mukuni's mothers.

Composed of low, smoke-filled huts built largely from sticks and mud, this scattered community of 10,000 people typifies rural Zambia in many ways, exhibiting both the remnants of failed development efforts and, at the same time, the seeds of hope and progress. At several sites stand the idle, rusting remains of Japanese water pumps installed by the government over a decade ago. Near the village centre rests another monument to misguided aid: a



An abandoned solar-powered water system in Mukuni.

Photo by David Kmiec / UNDP

Mukuni's first Mark II pump is in steady use.

large array of solar panels and a broken diesel pump. Neither are capable of filling the pipes that lead to the community's abandoned water taps.

When Mukuni's last handpump failed five years ago, survival dictated that the women lug heavy pails back and forth from the water-hole. "I would get up at two o'clock in the morning and walk in the darkness to fetch water for our first meal," says Fides Sikute, chairperson of Mukuni's 29-member water management committee. "We would go several times each day, but the water was poor in quality and people suffered from bilharzia and diarrhoea."

Despite the letdowns and continuing drudgery, however, Mukuni's women have mustered energy and enthusiasm for a new initiative to supply safer and more convenient water for their families. Over 60 new boreholes are being sunk and equipped with sturdy, reliable India Mark II handpumps in three provinces of southern Zambia under a project launched last year by the Office for Project Services (OPS) of the United Nations Development Programme (UNDP). The first two pumps are already installed in Mukuni and a long queue of bucket-holders has formed to partake of the fresh abundance.

"The water from the handpump is much safer for my family," says 35-year-old Judith Labisi, a mother of six and one of the most active water committee members. "I no longer have to leave the children alone for long periods to go and get water." The general health of the community is much better, she reports. "And the status of women in the village has improved because *we* are the managers of the new water system," she adds, smiling.

Key to the early success of the new water scheme was the work of Daniel Kibbuka-Kyobe, a soft-spoken Ugandan civil engineer who served for seven years with Zambia's Ministry of

A Push to Clean Up Urban Slums

Lusaka, Zambia — No more than five minutes' drive from this capital's bustling commercial district is the squatter settlement of Kanyama, home to over 70,000 mostly poverty-stricken Zambians who are day labourers, the unemployed and recent migrants from the countryside. Situated in one of the lowest and flattest parts of the city, Kanyama is vulnerable to flooding during the long rainy season and, until recently, had no system for surface water drainage. The muddy yards and streets — more like lakes after a downpour — make an ideal breeding ground for cholera and malaria, two diseases that are taking a heavy toll throughout the country. More than 600 people have died from cholera alone during the recent rainy season. The death rates are highest among the malnourished poor, especially the young.

But now a unique coalition of aid organizations is backing Project Urban Self-Help (PUSH), one component in the government's Social Action Programme, which aims to mitigate the negative effects of structural adjustment. The initiative combines food aid from the World Food Programme (WFP), funds from the governments of Australia, Switzerland, the UK, and the US, technical assistance from UNDP and the organizing skills of local non-governmental organizations (NGOs).

Operating under the management of Human Settlements of Zambia, a Zambian NGO, PUSH provides supervision, tools and food to support neighbourhood workers willing to construct latrines, dig drainage ditches and improve roads in poor settlements such as Kanyama. The US$3.5 million programme will support almost one million workdays over a two-year period and employ an average work-force of 2,600 each day.

"Almost all of the food used in PUSH is purchased in Zambia, which helps to support local farmers," says Anthony Mornement, who heads WFP's Zambian operations. "And the food gets directly to where it is needed most because 90 per cent of the workers are women and mothers."

Sociologist Vicki Mambwe has long experience working with community-based self-help efforts and now supervises PUSH projects. "Two years ago people said food-for-work wouldn't work in Zambia because food prices were kept so low by the government. But in the last 18 months, the price of the staple, maize meal, has multiplied over ten-fold," she says.

For 10 days' labour, each worker receives $40 worth of corn meal, beans, oil and infant weaning food. It is enough to make the difference between being well-fed and malnourished," says Ms. Mambwe. "It is better to pay the women with food rather than cash, as the men tend to use cash for beer," she adds. — **DHK**

Teams of women are paid in food rations to dig new drainage canals in Kanyama.

Photo by David Kanieu, UNDP

Residents look on as a new borehole is cleaned.

Health before joining UNDP. "We came into Mukuni thinking that what they needed was improved sanitation services," says Mr. Kibbuka-Kyobe. "But when we discussed priorities with the villagers and saw the plight of the women, it quickly became clear that safe water had to come first. Without water, there could be no sanitation."

Mr. Kibbuka-Kyobe's willingness to listen and learn was reciprocated, particularly by Mukuni's young women, who formed a water committee and began meeting weekly to conduct health classes. Soon after, the women were learning the mechanics of the Mark II and the basics of pump repair and maintenance from Mr. Kibbuka-Kyobe. Convinced of the need to care for their new water outlets, the committee started collecting fees from pump users to create a maintenance fund.

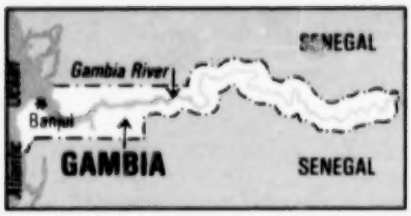
The spirit of Mukuni's newly mobilized women's committee is irrepressible. To spread their message, the committee sings a song in Lozi, their native language, for neighbours and visitors alike:

Water, water. We want water to drink.
We come to repair the boreholes.
We come, hard working women.
Women for water and sanitation.

Work has already begun on a clean-up campaign around the village in which residents are encouraged to bury their refuse in pits. If the singing women's committee members have their way, soon villagers will be building copies of the ventilated improved pit (VIP) latrines they see being constructed by Ministry of Health workers. Simple lessons about using water and sanitation for better health are being spread by the women through sporadic bursts of song around the village and at the pumps, where the ladies have a regular audience.

Slightly more than 40 per cent of Zambia's rural population had access to safe drinking water in 1988. Only one in three rural people had adequate sanitation facilities. The government, with help from foreign donors, intends to raise water and sanitation services to full coverage by the year 2000. Faced with the perils of structural adjustment, an economy which has stagnated for decades and a population growth rate of 3.2 per cent, that is a formidable challenge.

But the experience in Mukuni shows that when those who come to assist allow the "recipients" to set the priorities and make a contribution, the initiative then belongs to the people. That is the best insurance against today's new handpumps becoming tomorrow's white elephants. ■



From Provider to Promoter: Gambia's Rocky Transition

By Emma Robson

Banji, The Gambia — [illegible] the centre of this village stands a wind pump built in 1984 as a model water supply system for the western half of this tiny West African nation of 820,000 people. Today, water gushes from cracks in the corroded steel pipe and the taps that adorned the now dry water outlets are missing.

It is a scene repeated in many parts of The Gambia, and helps explain why after 13 years of assistance from an impressive array of donors, UNICEF estimates that only 40 per cent of Gambians enjoy a truly safe supply of water. The rural population has received little help from the government to improve sanitation, which consists of a few dry pit latrines built independently by individual families. Drainage facilities for water run off are scarce, contributing to a high incidence of malaria.

A recent visit to Banji and other water supply systems in western Gambia left Czech hydrogeologist Vladimir Plesinger as frustrated as the village people, many of whom continue to draw water from the open shallow wells they dug long ago.

Mr. Plesinger supervised the installation of solar and wind-powered pumps in 1983 and 1984 under a United Nations Development Programme (UNDP) project that compared the cost-effectiveness of the two technologies. Both systems yielded more than 30 litres per second — enough to serve villages of more than 1,000 people. But the wind pump system, complete with a storage tank and drainage facilities, cost only US$8,000, compared with $25,000 for the solar system. Mr. Plesinger recommended the wind technology to the Department of Water Resources as one that should be replicated. "The system worked perfectly," recalls Mr. Plesinger. "There was always plenty of water in the tank."

While the experiment's success fired the enthusiasm of the European Community (EC), which constructed several similar water pumps to supply fish processing plants, Gambia's Department of Water Resources apparently lost interest in the pumps when the project ended. "It was a UN project and the UN Chief Technical Advisor left," says Momodou Ceesay, the Department's Principal Technical Officer. "The pipe broke and was never repaired."

The Department's long-term aim is to privatize construction of wells, and installation and maintenance of pumps. Under a national Economic Recovery Programme launched in the mid-1980s, the Department received privatization orders aimed at cutting costs and accel-

This broken wind pump was intended as a model technology in western Gambia.

erating construction of new wells. The Department is now only half-way through a long and difficult transition.

In 1988, private entrepreneurs began taking over well-digging work. But the Department is still responsible for maintenance of all water supply installations. As Department Director Momodou Sahor points out, fulfilling that responsibility is difficult because nearly 300 of the Department's 700 full and part-time workers have been laid off since restructuring began.

The well-digging part of the plan, at least, is progressing satisfactorily. So far, nine experts have voluntarily left the Department to set up their own companies, and the work is pouring in. Falai Baldeh, who set up Mordix Well Digging and Pump Installation Ltd. in July 1988, has already dug 60 wells for the UN Capital Development Fund, the EC, the World Food Programme, WaterAid and other donors.

When Mr. Baldeh worked at the Department, he said it took five to 12 months to dig one well. It took so long not because workers used only picks and shovels but because they were paid a monthly salary. Under the new system, manual well diggers are paid by the metre. "We can do the job 15 to 20 per cent cheaper," says Mr. Baldeh. "And we never take as long as five months."

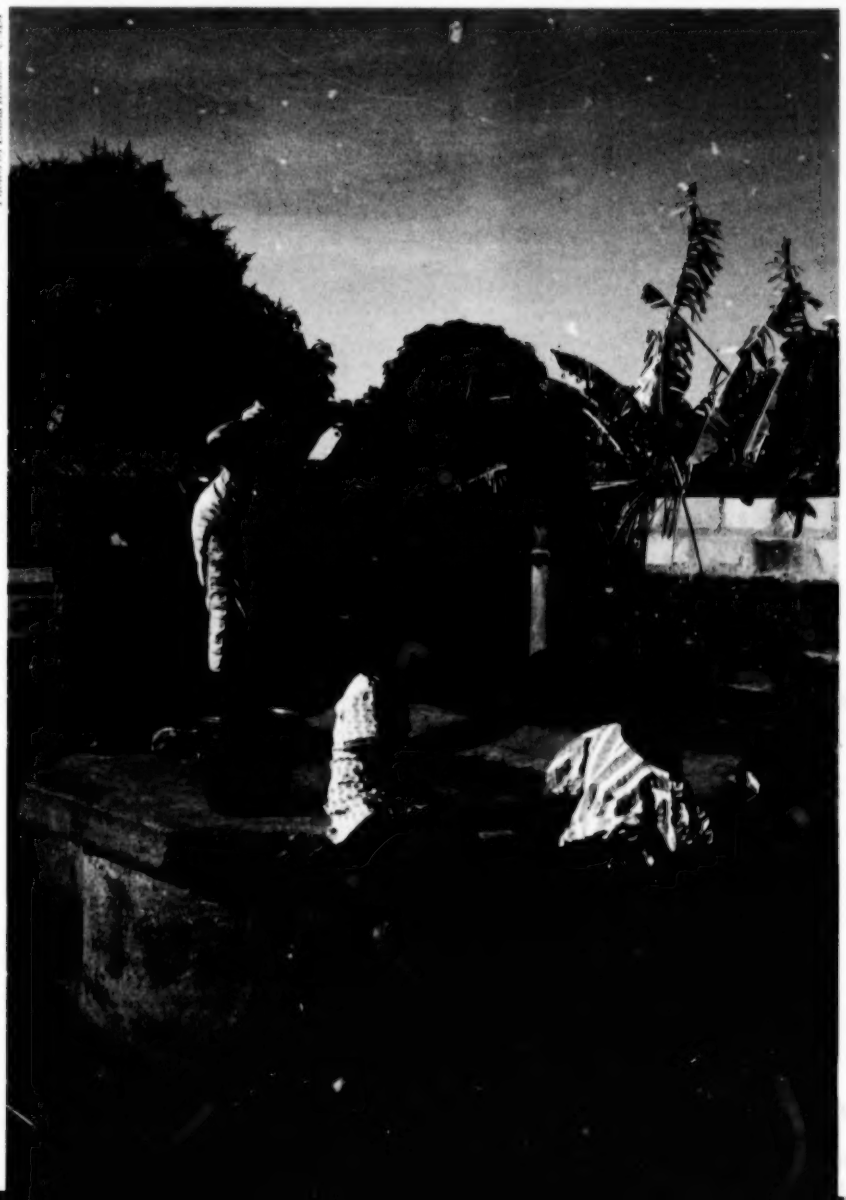
Besides speeding up the digging, privatization has brought other benefits. Mr. Baldeh has taken on 45 employees, bought two second-hand Peugeot pick-ups, and two motorcycles for his field supervisors. Momodou Manjang, another water entrepreneur, is spending his new earnings on replacing the mud blocks of his house with concrete. Company director Dobally Fatty has sent his four school age children to private schools. All the men have opened bank accounts. "My last monthly government pay cheque was $65," says Mr. Baldeh. "That hardly covered family living expenses and left nothing to save."

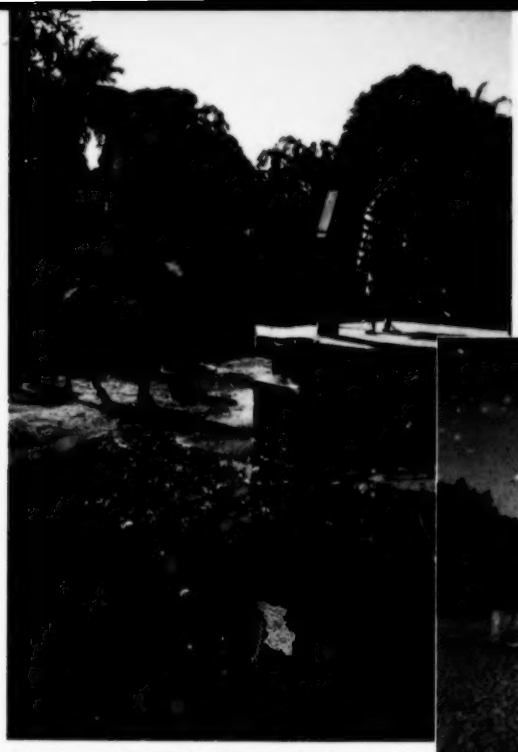
Department of Water Resources officials are as proud as the entrepreneurs themselves of their business success. But other problems raised by the privatization plan remain unresolved. In the future, contracts for well digging will include construction of drainage areas, troughs and installation of handpumps. But who is to equip the more than 200 of the 900 or more improved wells dug since 1978 with covers and handpumps? These wells were dug during a succession of drought years, when the government's main priority was to provide as many people as possible with water, good or bad. The lined but uncovered wells are now becoming as polluted as the traditional wells they supplemented.

As a result, many of those wells are not used except when it is exceptionally dry. The villagers of Wellingara,

The Gambia plans to transfer maintenance of pumps from government to the communities.

Photos by Emma Robson / UNDP





Some pumps installed in The Gambia have no drainage facilities.

A Saudi-funded programme begun in the mid-1980s built drainage facilities.

Concerned about contamination, Chief Malanding Demba wants a handpump and cover for the village well.

served by a communal well since 1962, plus several private wells, were excited when an improved well was dug near their market-place. But when the government team failed to put in a pump, many villagers lost interest. "It's very tiring to water 100 cattle with a bucket and string," says Abdoulie Jallow, the village chief. "This well is no better than what we had." A glance into the new well suggests that it is more appreciated as a rubbish dump.

When people in the neighbouring village of Sifoe threw waste into their new uncovered well, Chief Malanding Demba paid two villagers himself to remove the rubbish. "The well may not be easier to use than our wells," says Mr. Demba, "but it is the only well we can count on not to go dry in the hot season."

If the government is to succeed in transferring responsibility for maintenance to the people, gauging popular demand for new or improved services

Photo by Emma Robson / UNDP

Gambian Director of Water Resources Momodou Sahor says the government should promote, rather than provide, water and sanitation facilities.

Hydrogeologist Vladimir Plesinger found parts missing on a pump he installed seven years ago.

will be an important aspect of future development projects. A model admired by Department officials is a programme run by Germany's KfW development agency. With the help of local residents, the agency is digging wells and installing a German version of the India Mark II pump, whose stainless steel pipe is not corroded by contact with the country's acidic water — a problem with other Mark II pumps imported from Mali. Villagers are involved in pump siting decisions and construction, and local mechanics are trained to carry out repairs. The repairs are paid for by monthly family contributions collected by pump caretakers.

Such a model fits in with the government's concept of its new role. "The government should be a promoter, not a provider of water and sanitation services," says Mr. Sahor, using a phrase popularized at two international water and sanitation meetings he attended recently in Côte d'Ivoire and India. Exactly what the government's responsibilities will be are to be defined under a new master plan on water and sanitation which Mr. Plesinger, now employed by the UN Department of Technical Co-operation for Development (DTCD), is helping the government prepare. A newly reinstated working group on water and sanitation, including relevant government departments and all donor agencies, is expected to play a major role in this planning and research exercise.

One thing is certain. The government is unable to increase investments in the sector. "The government is not financing a single water supply project itself," says Mr. Sahor. "Nor does it intend to." According to UNICEF, 90 per cent of investments in the country's water supply sector are made by foreign development agencies, among which the UN and the aid agencies of Germany and Saudi Arabia have been prominent players. "The government wants to rely more and more on donor funding," says Mr. Sahor.

Mr. Plesinger believes that if the government is unable to spend more, it should at least strengthen the capacity of remaining Department workers to plan, monitor and co-ordinate activities nation-wide. "The Department is so used to getting aid," says Mr. Plesinger, who took up his assignment in late January 1991, "that it's not preparing itself for the day when the country can stand on its own feet, if that day comes." But the hydrogeologist is hoping things will change. The DTCD project is currently training Department workers in gathering and analyzing data on water resources availability and current use.

Before washing its hands of maintenance, the government must also make a decision on who is responsible for the expensive, heavy equipment bequeathed to the Department by various donors. When the well diggers strike water, they rent the Department's compressors to suck out the water to facilitate digging lower down. Much of this equipment is now standing idle through lack of maintenance, which is causing delays in the well-digging programme.

While problems remain, Mr. Sahor believes his department is at least headed in the right direction. "We've attained water security," he says, "now we can focus on water quality. We've selected a standard pump — the India Mark II — and now we are setting up a maintenance network." As long as aid continues to flood this small country, it should not be many years before it attains full coverage for water and sanitation. ■

Cash-strapped Madagascar's Elusive Search for Health

By Emma Robson

Kianjavato, Madagascar — Long after sunset, Pierrot Rajaobelina, chief of the health post here, finally sits down after a hard day's work. In the light of a kerosene lamp outside his wooden house, which also serves as a clinic and hospital, he pours himself a beer and watches his wife heap rice and fish onto his plate. The momentary calm is soon broken by the screams of a baby and Mr. Rajaobelina grabs the lamp and rushes into an adjoining room. There he finds a terrified father standing with his young son, whose entire torso has been burnt red by scalding water in an accident that happened only moments earlier.

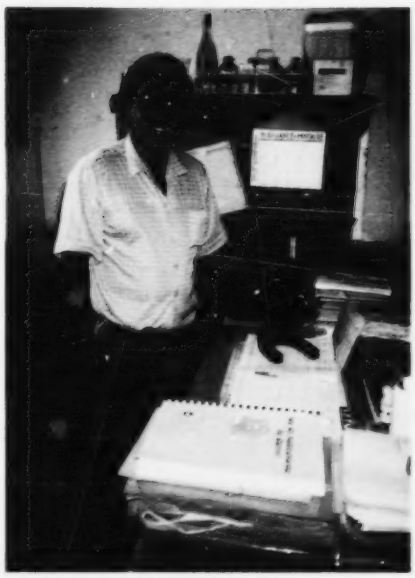
As usual, Mr. Rajaobelina does not have the necessary medicaments. He needs a healing lotion which is supposed to be routinely delivered by the Ministry of Health. He hasn't received any essential supplies in months.

"I told the father to go home and apply honey on his baby's burns," says Mr. Rajaobelina, a trained nurse. "I couldn't do anything more."

Madagascar has an extensive network of small health posts like the one run by Mr. Rajaobelina. In theory, they offer a practical way of serving the rural population of nearly 10 million, which is dispersed over a land mass larger than France. But major cuts in government spending since 1980 to conform with a structural adjustment programme backed by the World Bank and International Monetary Fund have reduced the annual health budget to such an extent that most health clinics are severely understaffed and undersupplied. Annual spending on health care per person is only 30 US cents.

As the only health centre serving 5,000 people, Mr. Rajaobelina's clinic, which is staffed also by an auxiliary nurse and midwife, is called on to perform an endless list of tasks. They range from vaccinating all children and treating the sick to signing death certificates and diagnosing the cause.

"Once I even had to deliver a calf whose leg got stuck inside the birth canal," says Mr. Rajaobelina, who was



Pierrot Rajaobelina manages government health services in Kianjavato.

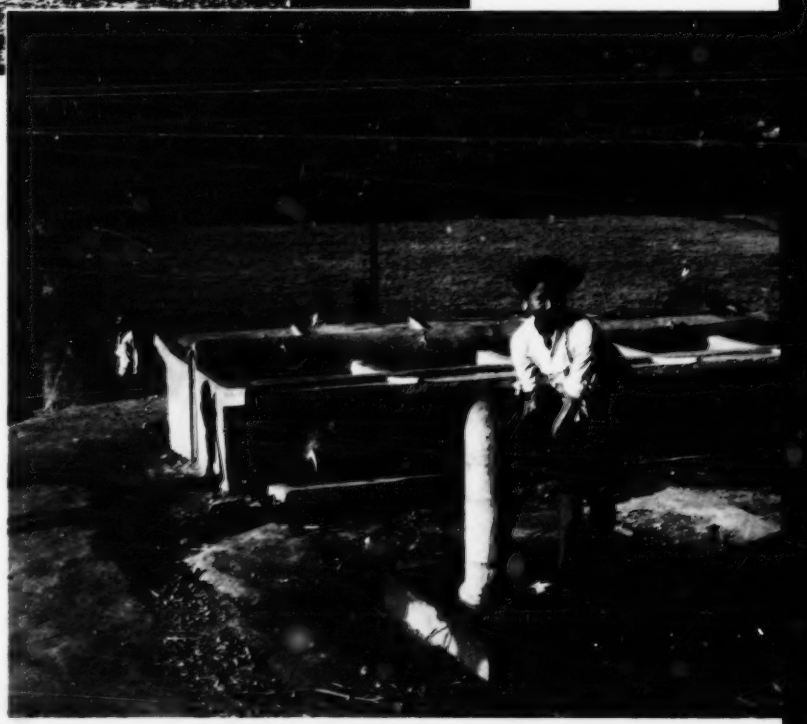
recently given a further responsibility. Under a water and sanitation project executed by the UN Department of Technical Co-operation for Development (DTCD) and the Ministry of Health, he was put in charge of organizing construction of a gravity-fed water system to serve the village's 800 people.

Rural water supply facilities in Madagascar are among the world's most deficient. No thorough national survey has been conducted, but Dr. Noé Rakotondrajaona, who supervises 72 health posts from the regional centre in Mananjary, estimates that no more than seven per cent of rural people are supplied with safe water and that no more than one per cent of rural families have latrines.

In eastern Madagascar where Kianjavato is located, sanitation, proper drainage and safe drinking water are of special importance. The region's wet, tropical climate is an ideal breeding ground for water-related diseases such as dysentery and malaria, which are major causes of illness and death. Since little is eaten here apart from locally-grown rice, many children have protein deficiencies, making them even more vulnerable to disease. The eastern region also has a high incidence of schistosomiasis, a parasitic disease transmitted to humans through snails that live in slow-moving water.

The most common type of schistosomiasis found in Madagascar is *Schistosoma mansoni*, whose cycle depends on the excretion of infected human stools into water. Dr. Rakotondrajaona estimates that nine out of 10 people use ponds and streams for bathing, washing clothes, drinking water and as toilets. Schistosomiasis (also known as bilharzia) is transmitted by tiny larvae that pierce human skin when it is submerged in water. "Anywhere from 20 to 90 per cent of the population in various communities in this area has schistosomiasis," says Dr. Rakotondrajaona.

Justine Ravaoarisoa still washes pans in the schistosomiasis-infested river because its gravel is good for scouring.



Washing stands were built to keep villagers away from the schistosomiasis-infested river.

Mr. Rajaobelina lacks the diagnostic equipment necessary to determine the exact causes of his patient's ailments, but his chart of village illnesses shows only a small decline in the incidence of diarrhoea, vomiting and abdominal problems — all possible symptoms of schistosomiasis — since the new water system was completed in summer 1990.

An early morning visit to the village provided one possible reason why. The water supply project, funded by the United Nations Development Programme (UNDP), installed concrete troughs for people to wash in. Yet down by the river, villager Justine Ravaoarisoa was standing knee-deep in the schistosomiasis-infested water to wash her pots and pans. "Why are you washing here when you know you can get schistosomiasis, which destroys your liver and can kill you?" asked Mr. Rajaobelina. She hopped briskly onto a stone and replied, smiling, "the sand in the river is good for getting the pans clean."

The problems encountered at Kianjavato's health post illustrate why Madagascar's already overburdened

Photos by Emma Robson, UNDP

William Ramaroharinosy directs Fikrifama, a Malagasy NGO specializing in water and sanitation.

health system cannot handle management of water and sanitation improvements. Some observers even doubt whether the government is a suitable channel for delivery of services. "The government should give up providing water and sanitation services, because it is not good at it," says Jacques Marchand, director of the UNDP-DTCD project. "The sector is run by managers in many different government departments who don't know who their counterparts are. Moreover, they don't have the means to do it." Mr. Marchand's counterpart, the director of the Ministry of Health's engineering department, has no vehicle and seldom leaves the capital.

Another problem is that rural Malagasies mistrust the government, which they feel has neglected them over the years. "In the beginning there was very little participation because the people saw it as a government project," says Mr. Marchand. Some Kianjavato residents tried to sabotage the works by cutting through newly laid plastic pipes. Consequently, it took Mr. Marchand and Mr. Rajaobelina eight

Kianjavato's children now have taps in their school yard.

Angèle Ravas cares for the water system that Fikrifama helped install.

months to get the people to construct their water system.

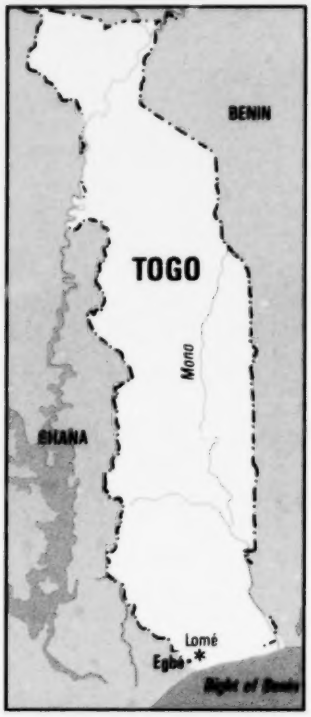
By contrast, it took Fikrifama, a national non-governmental organization, only three weeks to complete a similar system in the nearby village of Ambolotara. Fikrifama Director William Ramaroharinosy says his organization will not get involved with a village unless all members want development and are prepared to work for it. "We only give them further help if they maintain their existing facilities well," he says. Convinced that Fikrifama's approach is more effective, Mr. Marchand redirected UNDP funds to support latrine construction by the organization, which is helping families in three villages to build simple dry-pit latrines.

Whether organizations like Fikrifama are more suited to providing water and sanitation than the government is one issue now under investigation by the UNDP-World Bank Water and Sanitation Programme regional office in Nairobi, Kenya. The joint programme is helping develop a sector strategy and action plan for Madagascar. It is also assisting engineers at a large, private Malagasy company to refine a handpump design they have developed.

Sociologist Denyse Morin, a consultant with the joint programme, expects the future role of Madagascar's government to be limited to planning, promoting and co-ordinating funding of water and sanitation developments, with the communities themselves taking over management and maintenance of their facilities.

This approach fits in with the government's efforts to revitalize the country by liberalizing the economy and encouraging the private sector to take on responsibilities the government can no longer support. If the people of Ambolotara are any gauge, rural families appear eager to take care of their own development. With monthly family contributions of less than 70 US cents, Angèle Ravas and two other women are keeping the stand-pipe they manage spotless and watering and weeding a colourful array of flowers in the fenced surrounding area.

"Now we want latrines," says Ms. Ravas, "and I don't mind paying for it. The children here go to the toilet in the coffee plants and spread diseases. I don't want my child's tummy to swell up with diarrhoea. I don't think any mother wants that." ■



Togo: Where Even the Poorest Will Pay for Water

Lomé, Togo —Two hundred years ago, Djitri, King of the Evé tribe, chose Lomé as his capital. But when one of his young officers was killed in battle against the invading army of the Kingdom of Abomey, now Benin, the mother of the young officer took her revenge on Djitri by poisoning the only well in Lomé. The Evé were forced to move to a village a little farther east called Bé.

Today the situation is reversed. Lomé is again the capital of Togo while Bé, a shanty town of decrepid houses on the banks of a lagoon, has become its poorest neighbourhood. Most of Lomé's 400,000 inhabitants have access to clean drinking water. Yet until two years ago the 10,000 people who live in Bé were forced to draw contaminated water from the lagoon. Dozens of children died from diarrhoea caused by polluted drinking water. In the absence of toilets, flies feasted on scattered excrement and

By Ruth Massey

Public water taps were installed with assistance from a local NGO.

Photos by Ruth Massey / UNDP

spread diseases. Hookworm multiplied and rotting garbage stretched for blocks, adding to the smell and flies.

In 1988, Bé community leaders, like their Evé ancestors, went into battle, only this time the enemy was sickness and squalor. Help came from Conseils de Gestion Afrique Togo (CONGAT), a Togolese non-governmental organization that funds grassroots projects. CONGAT provided the technical advice and funding for the construction of community water fountains and two buildings to house public toilets. Residents provided their labour.

By extending Lomé's existing water supply network, tap outlets were installed at two of Bé's busiest intersections. Here, from 5:00 am to 11:30 am, and again from 3:00 pm to 8:00 pm, streams of people, mostly women and children, converge with pots, pails and jerrycans balanced on their heads. Shaded by huge avocado trees, women gossip and children play as they wait their turn for water. It is they who pay for maintenance of the stand-pipe and spare parts, each family contributing five US cents a week to a community fund managed by a caretaker.

A three-minute walk away are the two new buildings, shaded by banana trees, that house public toilets. Like the walls surrounding the public taps, the buildings are built of locally made baked earth bricks. One building has nine toilets for men and the other has 12 for women and three for children, all equipped with a flushing system that empties into Lomé's sewers.

The facilities are used an average of 3,000 times a day at a cost of three US cents a visit. At the entrance to the men's toilets is a sign reading "No spitting on the floor or walls. Absolutely no writing on stall partitions." In the midst of decay, the compound is a pleasant oasis with a view over the lagoon.

In the early evening, Bé suddenly comes alive. People hurry from their compounds to the water taps before the caretakers come to lock up. On their way they pass the huge expanse of rotting garbage. In its depths lurk disease and danger, especially for the children who chatter and play nearby. It became chillingly clear that the community must not delay tackling the garbage problem when, on a recent evening, a small boy could be seen sucking casually on a hypodermic syringe while filling his container at the tap.

All that should change soon. A group from CONGAT recently visited an innovative garbage recycling project near Porto Novo in Benin. They were impressed by what they saw and intend to use the same recycling methods in Bé. The International Labour Organisation is ready to supply the funding. ■

A sign on the men's toilet building prohibits spitting and graffiti.

A child sucks a syringe he found at a nearby garbage dump.

Making Urban Services Affordable in Niger

By Emma Robson

Niamey, Niger — In the sprawling straw and mud settlement of Yantala, which skirts the desert fringe of the Nigerien capital, water supply is a private affair involving a handful of better-off families, a group of water vendors and the public, who pay six US cents for a bucket of 20 litres. In downtown Niamey, customers at public water taps pay middlemen four US cents for a bucket of water that the government intended to be free. Meanwhile, in the brick and concrete homes of Niamey's well-to-do, water flows conveniently from personal taps and residents pay only one US cent for the same quantity.

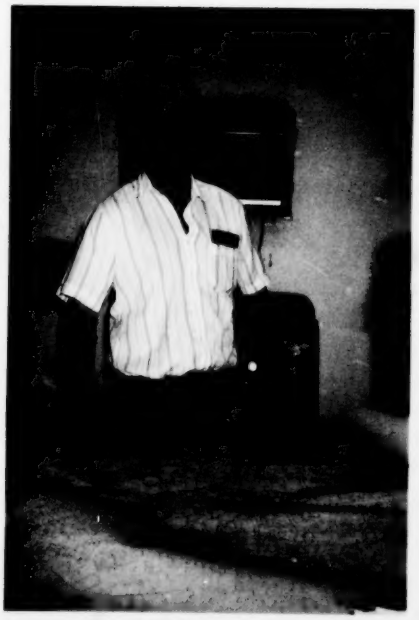
Needless to say, the national water company is running at a loss, while some of Yantala's more affluent families, who paid roughly US$600 to be connected to the city's water network, are turning a profit by reselling their water to less affluent neighbours. In effect, the government is subsidizing the water supply of the rich, while the private sector is taxing the sale of water to the poor. "It's a phenomenon that occurs in cities all over the developing world," says Dutch civil engineer Ronald van Nattem, who is directing an experiment to make water more affordable for Niamey's poor. "This is not an extreme case."

In vast, populous cities, where the poorest live on the cheapest land with the fewest advantages, providing water through connections to the metropolitan water system or by sinking boreholes can prove as costly as water that is trucked in. But in smaller cities like Niamey, whose total population is less than one million, it can be much cheaper to tap into the metropolitan network by laying lengths of plastic pipe.

Niamey's population is growing at seven per cent a year, a rate that reflects high natural growth as well as

Private water vendors do a brisk business on the outskirts of the Nigerien capital, where demand for clean water runs high.

Emma Robson / UNDP



Civil engineer Ronald van Nattem is co-directing Yantala's improvements.

Yantala's waste disposal problem will be handled by individuals who collect fees.

migration from rural areas to the capital as a result of years of drought. In poorer districts like Yantala, each small straw or mud house is home to eight or nine people and usually backs onto a neighbour's hut. The government hopes to improve living conditions in the capital's slum areas by encouraging some families to resettle, and those that remain to pay for and build their own improved houses and latrines.

In 1984, the most recent year for which data is available, only 29 per cent of Niamey's population was provided with a safe water supply. Safe water is certainly a luxury in Yantala. With an average family income of little more than $130 a year, many of its 15,000 residents cannot afford to buy from water vendors. Instead they draw water from wells they dug themselves that have become polluted by individuals who use them as waste dumps and even latrines. Under a new plan, managed by Mr. van Nattem, Yantala's residents will ultimately pay the full price of six new community water taps, which works out at only $1.20 for each of Yantala's 15,000 residents. The initiative is part of a slum improvement

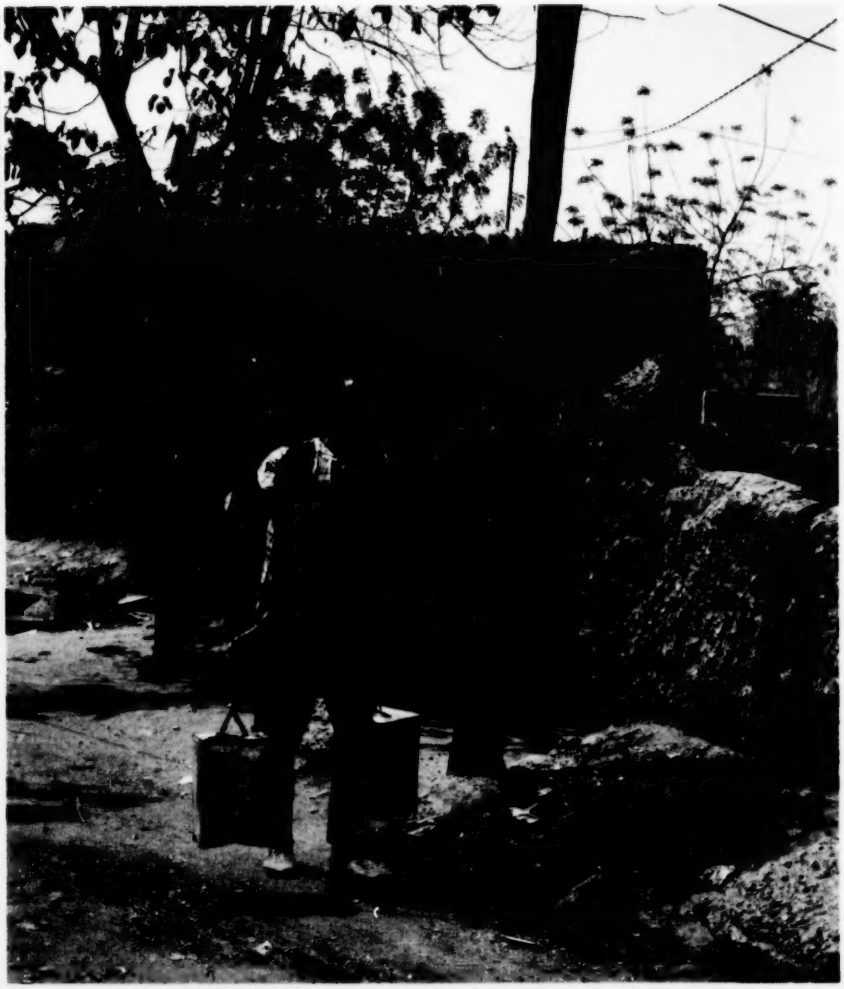


Photo by Emma Robson / UNDP

A typical water vendor in Yantala.

project financed by the United Nations Capital Development Fund (UNCDF) and the United Nations Development Programme (UNDP) and executed by the UN Fund for Human Settlements. Already, local labourers have constructed six community water taps, six public toilet blocks, some prototype private ventilated improved pit VIP latrines, and two sets of house modules, one set made of stabilized earth and the other of concrete blocks.

The public taps have been installed on a nearby 34-hectare plot which the government has donated as a resettlement zone for families interested in moving from overcrowded Yantala. The taps, which are housed in cement sales kiosks, shaded by sun canopies, were built by local masons at a cost to UNCDF of $18,000, or $3,000 per system.

The managers of the pilot project are confident that by fixing the price of water at two US cents per 20 litres, water consumers will succeed in repaying the full cost of the systems in five years. The price — fixed in agreement with the Town Hall — is one-third of what residents currently pay water vendors. Yet it is sufficient to cover maintenance costs and the salary of the water sellers, who will be supervised by city authorities. They will be obliged to regard fixed hours, pay the city water authority bills out of their earnings, and will have the right to sell other goods at their water kiosk.

A council of local residents, aided by Town Hall representatives and Ministry of Equipment technicians, is now introducing the families of Yantala to the other facilities offered under the urban improvement scheme. Families are being invited to take out loans to build new houses either in new or old Yantala.

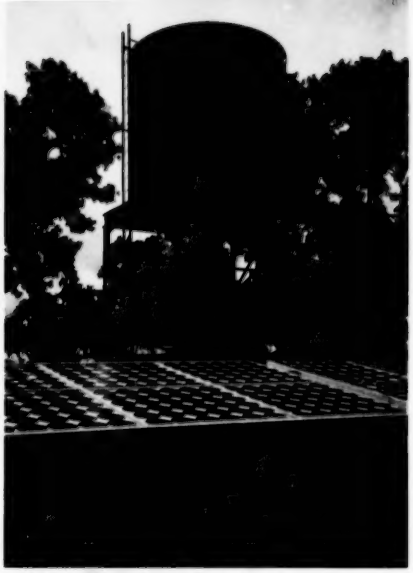
Koukou Ajbogbé, a Ministry of Equipment economist who works closely with Mr. van Nattem, estimates that 85 per cent of families in Yantala could afford to build a one-module, 23 square metre home of either stabilized earth or concrete blocks. Both cost nearly $1,500, 20 per cent of which families are obliged to put down before receiving the loan. Loan repayments are staggered over 15 years at very reasonable terms. The only subsidy is the materials required to construct the VIP latrines, which are provided free of charge as a special incentive.

It is early yet, but the hope is that when the project's initial investments are recovered, the water selling experiment will be extended to other parts of Niamey. "In theory, we should be able to apply the system on a much wider scale," says Mr. van Nattem.

The revolving fund supporting improved housing is also expected to benefit poor residents for years to come. To insure that its value is not eroded by inflation, late payments or default, the Ministry of Equipment is now installing piped water supply and electricity in Niamey's well-off residential areas, which it plans to sell at a profit large enough to create a fund with which to subsidize the expansion of water kiosks. If all goes according to plan, at least some poor Nigeriens will be paying a reasonable price for water by 1992, and some richer ones will be paying a slight premium. Equity at last. ■

Reassessing

By Emma Robson



In sunny countries like Mali, the water tanks of solar-powered pumps should always be full.

Bamako, Mali — Long considered too expensive, solar-powered water pumps are today proving increasingly economical. Spurred by international demand, solar technologies are getting better and cheaper. To serve a medium-sized village with water, many experts say photovoltaic pumps are now a highly attractive option.

A report published in 1990 by the US Department of Energy found that photovoltaic systems in Mali cost an average of US$35 to $60 per person, including the drilling, solar electricity pumping system, water distribution and storage. Depending on the depth of the borehole, the total costs of a handpump system work out at $27 to $136 per person, the report said.

For a long time development planners have not opted for solar-powered systems because of the high initial capital costs. Photovoltaic panels now cost half what they did in 1977, according to Mamadou Diarra, head of the photovoltaic section of Mali's Solar Energy Laboratory. Yet Mr. Diarra says many water sector specialists balk at the $30,000 to $50,000 price tag for solar pump installations designed to serve 2,000 people or more.

The good news is that solar panels — the most costly component of the system — are likely to get even cheaper. "The chances are that prices of the panels will be halved again by 1995," says Robert Annan, author of the US report. He expects the decline to come as a result of the Department of Energy's encouragement of US manufacturers to adopt newer technologies and more efficient production lines. This, in turn, is likely to spur improvements among manufacturers elsewhere.

Such encouraging developments make existing handpump installations in Mali look costly in retrospect. French hydrogeologist Marc Simonot, who directs a water resources project financed by the United Nations Development Programme (UNDP) and executed by the UN Department of Technical Co-operation for Development, compared the cost-effectiveness of pump installations, old and new. "Some villages of 3,000 people have 15 Mark II pumps," says Mr. Simonot. "When you add up the cost of all those boreholes, it would have been much cheaper to drill just one and equip it with a solar pump."

An 80-metre borehole, which is the average depth of wells in Mali, costs $10,000 to drill. Locally made Mark II pumps retail at $1,400 but yield an average of only 10 cubic metres of water a day. A solar installation, complete with electric pumps, may cost $40,000, but it can supply an elevated storage tank with up to 300 cubic metres of water a day at no physical effort to humans. "Over the long haul," says Mr. Simonot, "solar systems are more cost-effective."

Mali has been a major testing ground for photovoltaic pumps. The first ones were installed in 1977 by Aqua Viva, a French-financed, Mali-based non-governmental organization. The success of those pumps has encouraged other donors to erect more than 150 systems throughout the country. Last year, the European Development Fund embarked on the biggest solar pumps programme to date. It plans to install 1,040 solar pumps in the Sahelian countries, of which 200 are destined for Mali.

Worldwide, more than 5,000 solar pumps are now in operation.

Mr. Simonot sees solar power playing an important role in the future development of Mali's water resources. Currently, the country uses only 2.5 per cent of its underground water resources. Irrigated farming is not common and partly explains why Mali is far from its long-term goal of food self-sufficiency. "I'm convinced that solar pumps are the answer," says Mr. Simonot.

While diesel pumps are a technology well suited to irrigation, the operating costs of diesel pumps are high. "Mali has to import all its fuel, which is

Solar-powered water supply systems are becoming increasingly economical.

Solar Power

Photos by Emma Robson / UNDP

Malian villagers use their solar-powered water supply for drinking and attach a hose for irrigating vegetables.

heavily taxed," says Mr. Simonot. "Diesel pumps, moreover, require a lot of maintenance."

Diesel pump motors frequently break down and are normally replaced every five years. The electric pumps run by solar power break down less frequently and the panels themselves require only periodic cleaning. The US report found that between 1983 and 1989, the 66 Malian photovoltaic pumps surveyed were out of service only one per cent of the time. "These systems are inherently simple, are very cost-competitive in a broad middle range of well depths and water requirements, and are very well accepted by the people served," concluded Mr. Annan.

If Mr. Annan's price forecast is correct, developing countries are likely to be importing a lot more solar panels from industrial countries, where most of the manufacturers are based. But Mali is attempting to produce its own panels from scratch. Bamako's Regional Centre for Solar Energy plans to produce solar panels in Mali and market them throughout West Africa. By producing panels locally, the centre hopes to avoid the crippling taxes that the West African Economic Community imposes on imports of electrical goods from non-member countries.

Set up in 1986 with funding from the African Development Bank, the Centre is supported by the governments of France, Germany, the US, seven West African governments, as well as UNDP and the Canadian-based International Development Research Centre.

Robert Foro, a Burkinabé who directs the Centre's technology department, has studied the region's energy needs and is now seeking partners in industrial countries to invest in a company to produce solar panels. "We think solar power is indispensable to the region," says Mr. Foro, who estimates that 80 per cent of the region's energy needs are met by wood. "The population is so dispersed it is not viable to install traditional electricity grids."

Solar power appears to be an ideal solution to the region's energy and water supply problems. More than 80 per cent of the population has no electricity and little more than 40 per cent has safe water supplies. The large capital costs required are an obstacle in the short-term. However, in the long-term, rural residents should be able to pay more of the costs of solar pumps by growing irrigated cash crops. ■

Some Findings of the US Study

With a borehole depth of 25 metres or greater, photovoltaic pumps provide the lowest cost water in villages with a population over 250. For populations larger than 500, hand-pumped water is twice as costly as solar-pumped water.

With a borehole depth of 50 metres, photovoltaic pumps provide the lowest cost water for villages with 250 to 2,000 people. For villages with more than 2,000 people, the costs of diesel-pumped and solar-pumped water is roughly equal.

Photo by Emma Robson / UNDP

Most Gambians sleep under mosquito nets.

Bed Nets that Beat Malaria

By Emma Robson

Brefet, The Gambia — Maram Biyai's bed, like that of most rural Gambians, is shrouded at night by a dense net that protects her from the bite of female mosquitoes that transmit malaria during the June-to-October rainy season.

It is a sensible practice in a country where malaria strikes most children once a year. In The Gambia, more children die from malaria and pneumonia than from any other causes. Pregnant women are also vulnerable to malaria, for they tend to lose the immunity they have built up in adult life. But Ms. Biyai uses the net because, "if I didn't have one, I'd be scratching so much I would never be able to sleep." There is another reason why women in Brefet like nets. The wives of Gambian men of the predominant Mandinka tribe sleep together in one room. The nets give them and their children some privacy.

Researchers working for the Medical Research Council Laboratories (MRC), a British organization whose Gambian branch runs a US$5.6 million a year health research programme, estimate that there are 200,000 to 300,000 nets in use throughout the country. Considering that two people or more share a bed, the figures suggest that most of the population of 820,000 are getting some protection.

But not enough. With a grant from the Tropical Diseases Research programme (TDR) — a global programme funded by the World Health Organization (WHO), the World Bank, the United Nations Development Programme (UNDP) and other donors — the Council's researchers conducted a study in 1985 that showed that ordinary bed nets reduced malaria attacks by less than one-third.

"The problem with nets is holes," says MRC Director Dr. Brian Greenwood. "Mosquitoes hungry for a blood meal will find a way in, and once they're in, it is hard for them to get out."

Dr. Greenwood's research team found that only one per cent of the country's mosquitoes carry the malaria parasite, compared with 10 per cent in nearby Sierra Leone. However, the mosquito population is much denser in The Gambia. Gambian researcher Musa Jawara has spent many humid nights in Gambian villages trapping mosquitoes in a room with the help of an illuminated cage. The average number caught in one night is 30. "But I have caught up to 500 in one room," he says.

After establishing the limitations of bed nets, the MRC began looking for a simple but more effective protection method. They decided to try impregnating bed nets with insecticide, an approach which had produced encouraging results in small trials in other parts of Africa. They contacted the TDR programme, which at the time was looking for a place to try out *permethrin*, a relatively new insecticide developed by the Wellcome Foundation of the UK which is non-toxic to humans. The TDR programme gave

MRC a grant to test the chemical.

In the first test, conducted in 1985, 10 per cent of the population of a large village was asked to soak their nets in bowls containing a *permethrin* solution. The experiment resulted in a 50 per cent reduction in malaria attacks in children. In another study, all the nets in a group of villages were impregnated, resulting in a 70 per cent reduction in malaria outbreaks. In 1989, the researchers extended their experiment to 17 villages, reaching a total population of 14,000. Their earlier success was repeated: the impregnated bed nets resulted in a 70 per cent reduction in malaria. "The pesticide knocks most mosquitoes dead, whether or not there are holes in the nets," says Dr. Greenwood.

Because villagers were asked to dry off the nets on their mattresses in the sun, the nets also killed off other bugs that dwell in household mattresses. "The practice became extremely popular," says Dr. Greenwood. "This suggests the insecticide has a good market."

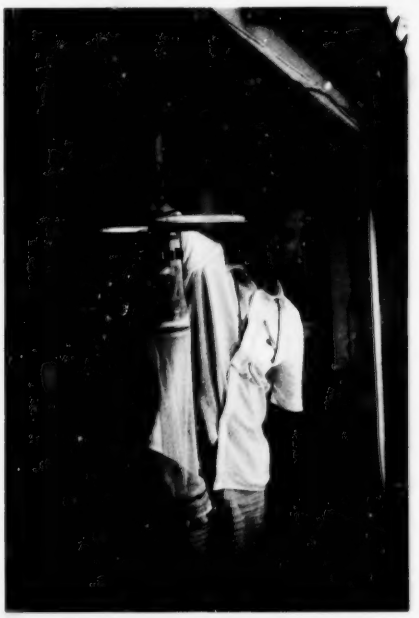
More encouraging still is news that the treated nets cut in half the number of child deaths from malaria. One in 20 children die in The Gambia each year from malaria, falling prey to *Plasmodium falciparum*. This species of malaria parasite affects the brain and is responsible for most of the world's one to two million annual malaria deaths. Half the 3,000 children admitted each year to the Royal Victoria Hospital, Banjul, The Gambia's main referral hospital, are diagnosed as having malaria. "Of those, 20 per cent die," says Dr. Greenwood.

With funding from WHO — and hopefully other donors — Dr. Greenwood plans to assist the government in launching a national bed net impregnation campaign in 1992. The first impregnation will be provided free. But subsequent annual dousings will be charged at cost. At less than $1 a dip, Dr. Greenwood is confident that villagers nation-wide will be buying *permethrin* long after the MRC and government field workers have left.

An important justification for launching similar programmes throughout the developing world is the fact that all malaria parasites are becoming increasingly resistant to drugs based on the chemical *chloroquine*, which is currently the main drug used to prevent and treat the disease. Scientists fear, moreover, that an effective vaccine, when it comes, may be too expensive to allow widespread application. So far, only a small percentage of Gambian parasites have acquired immunity to *chloroquine*. But resistance to the drug is spreading west from Southeast Asia, where parasites have developed nearly 100 per cent resistance, through East Africa, where up to 35 per cent of the parasites are resistant.

A new drug developed by Chinese scientists from a traditional herb, *qinghaosu*, which has an entirely different chemical structure, has proven very effective in early trials. But it will take a few years for centres, including MRC, to be able to determine through testing whether this drug should replace *chloroquine* as a treatment for severe malaria.

According to Dr. Thomas Nchinda, an epidemiologist working on the TDR programme, many African health ministries are no longer distributing *chloroquine* tablets to prevent malaria. The practice is costly and is feared likely to induce greater resistance to the drug. Instead, Dr. Nchinda advocates impregnating bed nets and curtains as the most cost-effective method of preventing the 107 million cases of clinical malaria that occur in the developing world each year. "There's been a resurgence of malaria all over Africa," says Dr. Nchinda, "so we can't wait for research to bear new fruit. The Gambian studies show that we have a very simple, low-cost tool that is also very effective." ■



MRC Director Brian Greenwood holding a light-trap.

The African Development Bank

Abidjan, Côte d'Ivoire — Only in recent years has the African Development Bank (AfDB) started to play the influential role envisaged at its establishment in the 1960s. More than just a bank, the institution was intended as an all-African agency providing expert advice as well as loans to African nations striving to accelerate development in a new era of independence.

Since 1966, when a staff of 10 began making loans based on capital of US$250 million, the AfDB has become the second largest lending agency to the region after the World Bank. Its capital has grown to $22 billion and its professional staff to 1,100, more than 95 per cent of whom are African.

The International Drinking Water Supply and Sanitation Decade (1981-1990) provided the AfDB with an opportunity to demonstrate its growing technical experience and its value as a regional forum. But only in the second half of the 1980s, when Africa sank into economic difficulties, did it begin to attempt to influence how African governments invested their money.

In the 1970s, when Africa was riding on a wave of high commodity prices, loans from commercial banks and governments were so easy to come by and so easy to repay that the continent barely needed a regional bank of its own. Governments spent millions of dollars installing traditional urban water supply and sewerage systems in Africa's rapidly growing cities. The Bank itself invested only $30 million in a mere eight water supply and sanitation projects between 1970 and 1974.

The crunch came in the early 1980s, when commodity prices tumbled and virtually all African countries embarked on austerity programmes that entailed big spending cuts. As it became more difficult for governments to obtain new financing from their traditional sources, they turned more and more to the AfDB.

Since 1988, the AfDB has lent $731 million for 41 water supply and sanitation projects. More than 60 per cent of this was disbursed by the Bank, which lends on market-based terms. The rest came from the African Development Fund and Nigeria Trust Fund, two soft loan arms of the AfDB which offer 50-year credits at very low interest rates, thanks to grant contributions from donor governments. Investments in water and sanitation represent 14 per cent of total AfDB lending, unchanged from the 1975 to 1979 period.

The main reason why such loans have not increased as a percentage of total lending, bank officials say, is that Africa has yet to devise sound strategies for recovering costs. "Unlike agriculture," says Burkhard Mohlinger, a Belgian engineer with the Bank, "water and sanitation is difficult to make profitable. Governments are now unable to subsidize social services, and as a bank, we need to get our money back."

Some observers, however, say the Bank has not promoted water and sanitation aggressively, nor increased the effectiveness of money spent by insisting that governments select cheaper technologies, reduce public subsidies and improve tariff systems. "We're still going for bigger, more conventional systems and mainly in water supply," says Shashi Desai, a Mauritian electrical engineer who heads the Bank's Public Utilities Division for the Southern Region. "Our experience with latrines and even sewers has been very limited."

More than three-quarters of the Bank's recent disbursements for water and sanitation went to water supply, and 70 per cent of water supply investments are in large urban centres. This imbalance is partly compensated by the African Development Fund. Support to least developed countries is a more important criterion than cost-recovery in the Fund's lending policy, which means it has backed a number of projects, including sanitation, in small towns and rural areas.

Mr. Mohlinger says economic austerity and rapid population growth are making governments now realize that they can no longer afford the same standards in water supply and sanitation as developed countries. "Many are opting for lower-cost alternatives," says Mr. Mohlinger. "But it's a slow process."

Recently, the AfDB has made more efforts to persuade governments to cut costs, suggesting cheaper designs. Instead of European standard wide-diametre pipes designed to provide 150 litres of water per capita per day, the Bank proposes adoption of smaller pipes supplying only 80 litres. As an alternative to conventional piped sewer networks linked to expensive waste treatment plants, the Bank advocates on-site sewage disposal systems such as septic tanks serving individual houses or clusters of homes. The Bank is also increasingly insisting that loans be used first to rehabilitate existing facilities, and only secondly to construct new ones. Before 1985, only 12 per cent of AfDB projects included rehabilitation works. Since 1985, the portion has risen to nearly 40 per cent.

The AfDB is becoming more aggressive on policy issues and its new influence was apparent at the African Water Supply and Sanitation Sector Conference, held last May in Abidjan. Delegates from 46 countries endorsed the Bank's policy of giving priority to rehabilitation of existing systems. They also agreed that investments should be based on effective demand and should strive to ensure the financial viability of the service organization. Significantly, they approved privatization as a path to greater efficiency.

The Bank would like to see government water and sanitation companies run as profit-making entities. "Ideally, all state subsidies to the sector should be abolished," says Elsadig Musa, a leading Bank policy-maker.

The AfDB's future challenge is to help interested countries make that ideal a reality. With an eye on the future, the Bank announced at the Abidjan meeting it was establishing a Regional Orientation Committee, which will meet regularly to help ensure that the principles endorsed in Abidjan are effectively carried out.

— **Emma Robson**

African Development Bank

The African Development Bank is supporting this water supply project in Tanzania.

The Collaborative Council Grows

The "New Delhi Statement" was not the only important outcome of last September's "Global Consultation on Safe Water and Sanitation for the 1990s," sponsored by UNDP and the Indian government. Just prior to the opening session, the Collaborative Council of External Support Agencies met to plan the future scope and direction of the 30-member group, comprised of bilateral, multilateral and non-governmental aid organizations supporting water and sanitation programmes.

At the closing plenary on 14 September, Council Chairman Alexander Rotival announced the establishment of an expanded Water Supply and Sanitation Collaborative Council, which will provide a global forum for the exchange of information and promotion of the sector. Membership is now open to water and sanitation professionals from both developing countries and external support agencies involved in the sector. "This expanded forum, representing more actors, will provide a means of keeping alive water and sanitation concerns through to the 21st century," says Mr. Rotival.

A five-point mission statement for the new Council was unanimously endorsed. It charges the Council with seeking consensus among sector professionals on key policy issues, encouraging greater efficiency in programmes and raising public awareness in support of intensified efforts. The Council will also promote collaboration at the country level and stimulate the adoption of more harmonious strategies and programmes among members and governments. "Bringing in our partners from the developing world and more donor institutions will enhance the effectiveness of the new Council at the country, regional and global level," says Mr. Rotival.

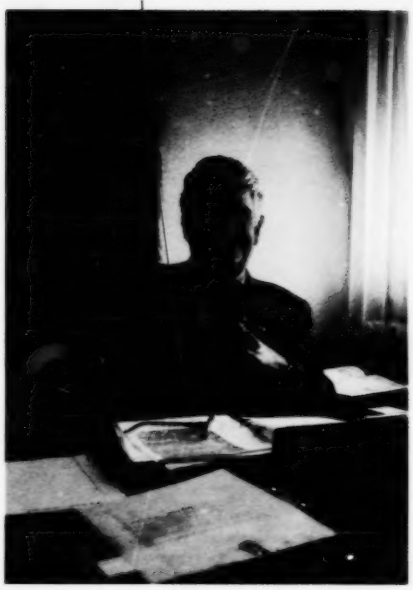


Photo by Emma Robson / UNDP

Alexander Rotival, Chairman of the Collaborative Council.

Meetings of the full Council will take place every two years, with the first one planned for September 1991, hosted by Norway. In preparation for this, the Council is preparing papers on key issues including financing, applied research and public information policy and promotion. The Council Secretariat will be based at the World Health Organization in Geneva.

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Ghana and Nigeria Cut Guinea Worm By Over One-Third

Provisional results of surveys in Ghana and Nigeria show that both countries dramatically reduced the incidence of Guinea worm disease (*dracunculiasis*) since 1989. In Ghana, the number of cases fell to 117,000 in 1990 from 179,000 in 1989, nearly a 35 per cent decline. The number of cases in Nigeria dropped to 394,000 in 1990 from 640,000 in 1989, or 38 per cent.

"These substantial reductions are added proof that the two most highly endemic countries are well on their way to meeting their eradication targets," says Dr. Donald Hopkins, who heads up the Guinea worm eradication efforts of Global 2000, a programme of the US-based Carter Presidential Center in Atlanta, Georgia. Ghana's government is committed to eliminating the disease by 1993. Nigeria has set 1995 as its target date.

"Evidence from the field shows that simple health education is having the biggest impact in reducing the disease," says Dr. Hopkins. "Once people understand where Guinea worm comes from and how it is transmitted, they are more than willing to use filters and new safe sources of water." ■

LOOKING AHEAD

Continued from page 2

ahead. This effort is being supported at the international level by the UNDP-World Bank Water and Sanitation Programme, which promotes sustainable approaches to providing water and sanitation to the poor. The Programme, which has regional teams in Kenya and Côte d'Ivoire, is entering a new phase in Africa, and plans to support government efforts to apply the lessons learned in the Decade on a massive scale. The aim is to link the Programme's innovative approaches with the World Bank, the African Development Bank, and bilateral donors, whose financial resources will be needed in this move to scale.

An example of this partnership in Africa is to be found in Ghana, where the government, with the support of the UNDP-World Bank Programme, organized a rural water supply and sanitation workshop in February, attended by the development agencies of Canada, Denmark, France, the World Bank and UNDP, among others. These donors plan to support the government in a new national programme in which they will work side by side in responding to the needs of millions of Ghana's rural poor for safe water and sanitation.

The Programme plans to work with the World Bank and other donors in replicating this approach in other countries, supporting governments in the development of programmes based on sound policy frameworks. Special attention will be paid to strengthening the management ability of local and national governments and communities, and advising governments on appropriate policy and legislative reforms.

The real thrust, however, must come from countries themselves: from governments in nurturing local efforts, and from countless communities in cities, towns and villages across the continent. They are ultimately the only ones who can ensure that the improvements they have forged will be lasting. ■

Water Quality Debate

Dear Editors,

An article in the December 1990 *Source* titled "Zimbabwe Pioneers Low-Cost Technologies" included photographs and a drawing of what is called a Bucket Pump. I do not claim to be an expert on appropriate pump technology, but it appears that this pump may cause more problems in the long run than solutions.

As you are well aware, one of the greatest tragedies that can befall a water source is contamination. It appears that the Bucket Pump allows for plenty of human contact with the outside of the bucket, and may be an easy vector whereby organisms can enter the well. The optimum way of retrieving water from depth should be with the least amount of contact with unsanitary sources and it appears that the Bucket Pump may allow for unsanitary contact which is lowered back into the well.

Another concern I have is the adequacy of the well cover and pump. Having worked on water projects in the United States and Zambia, I have seen many ring wells with missing buckets, chains and covers. Many of these parts are easy to steal and can be readily used by others. Another concern is that of the inherent risk of having an open-topped well. It is amazing how many things can fall into wells—rocks, tools, food, rain etc. From experience it is even possible to drop the bucket and chain down a well even when the chain is welded to the windlass.

I feel that the Bucket Pump type of wells will in the long run be counter productive to the goal of supplying a clean, safe water supply. I know that any water supply is better than no water supply, but for just a little more effort, a handpump assembly can be installed which will do so much more good than the Bucket Pump.

— Martin Hamaan,
Senior Staff Hydrogeologist,
Geomatrix Consultants,
Costa Mesa, California

David Kinley replies:

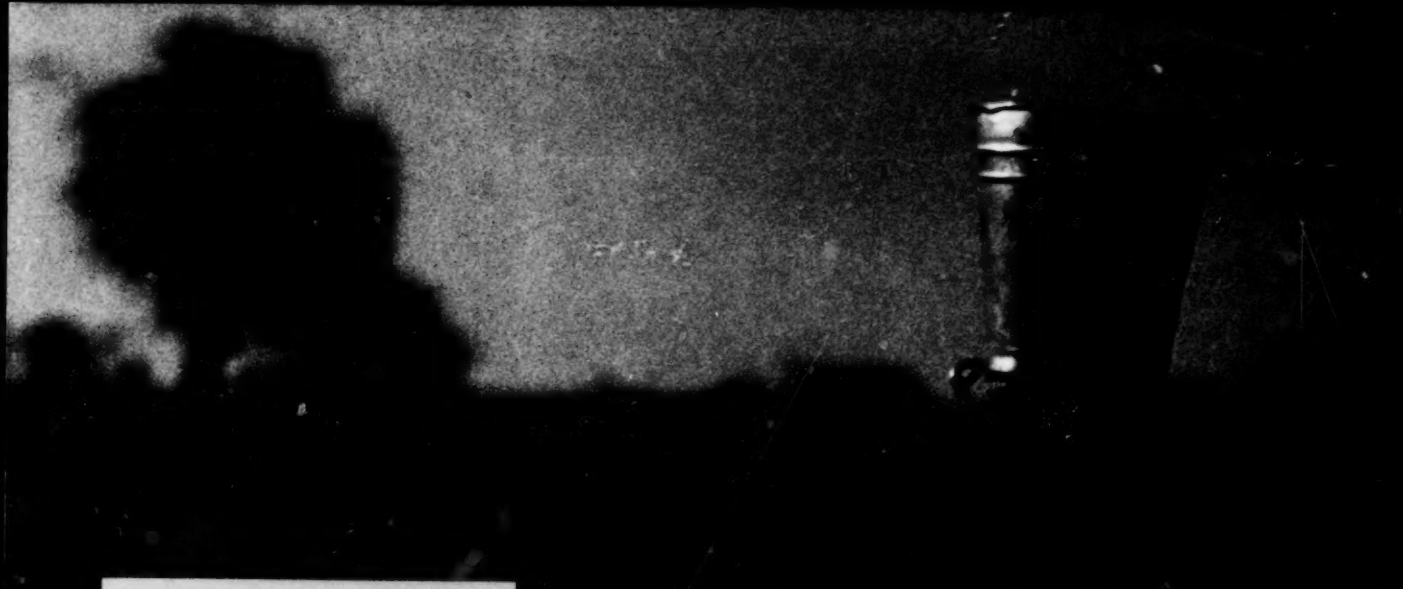
A number of the important issues you raise regarding the suitability of the Zimbabwean Bucket Pump are addressed in detail in a new book written by Dr. Peter Morgan of the Ministry of Health's Blair Research Laboratory entitled Rural Water Supplies and Sanitation *(Macmillan:1990).*

Regarding the issue of contamination of well water by surface sources, detailed field studies of village Bucket Pumps in Zimbabwe reveal that the wells produce water of relatively high clarity and bacteriological quality. This is due, according to Dr. Morgan, to the flushing effect — the high rate of change of water in the well casing.

"Buckets are handled at the surface," says Dr. Morgan, "and might be expected to take down contamination into the tube-well. However these are diluted rapidly as water is flushed through the system, fresh water entering the base of the tube-well to replace water being extracted at the surface."

A number of bacteriological studies have been conducted to compare water quality from traditional wells, handpumps and Bucket Pumps. Water extracted from Bucket Pumps in rural areas was only slightly more contaminated with bacteria than water from handpumps. Compared with water raised from poorly protected wells, water from the Bucket Pumps was remarkably low.

Blair Research Laboratory has also investigated other potential problems with the Bucket Pump including wearing parts, chain theft, buckets falling down the tube-well and objects thrown down the tube. Their guide to operation and maintenance provides workable, village level solutions to each of these problems. More important than any of the technical challenges is the issue of involving the community in regular pump maintenance. A high degree of community participation in the rural areas of Zimbabwe has resulted in very few instances of theft of parts, objects thrown down the tube or deliberate fouling of the well water.



Safe Water 2000

A video and companion booklet on water and health challenges in the 1990s

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